## REMARKS

Applicants thank the Examiner for the thorough examination of the application. No new matter is believed to be added to the application by this amendment.

Status of the Claims

Claims 1 and 3-9 are pending in the application. Claim 2 is canceled by this amendment. The amendments to claim 1 incorporate the subject matter of claim 2 and find additional support at pages 9, 19 and 20 of the specification. The amendments to claim 3 clarifies the language of the claim without narrowing its scope. The amendments to claim 5 remove a limitation. New claim 9 is supported by claim 1, 2 and pages 9, 19 and 20 of the specification.

**Deletion In Preliminary Amendment (paragraph 1 of the Office Action)**

Applicants verify the Examiner's understanding that the Preliminary Amendment filed February 13, 2001 requests that the second "the" at page 11, line 6 of the specification be deleted.

**Double Patenting Rejection (paragraphs 2 and 3 of the Office Action)**

Claim 4 is rejected under the judicially created doctrine of obviousness-type double patenting over claim 1 of Nakagawa (U.S.

Patent 6,214,447) alone, or alternatively, in view of Textbook of Polymer Science. Applicants traverse this rejection and respectfully request reconsideration and withdrawal thereof.

At page 3 of the Office Action, the Examiner asserts that claim 1 of Nakagawa is identical to claim 4 of the present invention with the exception that claim 4 requires low density polyethylene that is "obtainable by high pressure processes." However, independent claim 1 (upon which claim 4 depends) has been amended to remove the "obtainable by high pressure processes" limitation while incorporating subject matter from claim 2, which is free of this rejection. As a result, instant claim 4, by its dependency upon amended claim 1, is patentable over Nakagawa.

However, in order to expedite prosecution, a Terminal Disclaimer of the Nakagawa patent is being filed concurrently with this paper. Accordingly, this rejection is overcome, and withdrawal thereof is indicated.

**Rejection Under 35 U.S.C. §112, Second Paragraph (paragraphs 4 and 5 of the Office Action)**

Claims 1-8 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite. Applicants traverse this rejection and respectfully request reconsideration and withdrawal thereof.

At paragraph 5(a) of the Office Action, the Examiner asserts that the "obtainable" by high pressure processes limitation is

indefinite. However, this limitation has been removed from the instantly amended claims. Accordingly, this part of the rejection is rendered moot.

Regarding paragraphs 5(b) and 5(c) of the Office Action, the Examiner's comments have been considered. As a result, the claims, as amended, are clear, definite and have full antecedent basis. Accordingly, this rejection is overcome and withdrawal thereof is indicated.

**Rejection Under 35 U.S.C. §103(a) Over EP'121 In View Of Sadatoshi and Yamamoto (paragraphs 6-8 of the Office Action)**

Claims 1-5 and 7-8 are rejected under 35 U.S.C. §103(a) over EP'121 (EP 716121) in view of Sadatoshi (U.S. Patent 5,340,878) and Yamamoto (U.S. Patent 5,656,696). Applicants traverse this rejection and respectfully request reconsideration and withdrawal thereof.

The Present Invention and its Advantages

The present invention is aimed at providing a propylene/1-butene copolymer composition for use in a laminate layer of a composite film. The composite film using the claimed composition exhibits excellent low-temperature properties and hot tack.

As set forth in instant claim 1, the propylene/1-butene random copolymer composition has 50 to 96% by weight of a propylene/1-

butene random copolymer (A) and 4 to 50% by weight of a low-density polyethylene (B).

The properties of the propylene/1-butene random copolymer (A) include: (1) 60-90 mol% of structural units derived from propylene and 10-40 mol% of structural units derived from 1-butene; (2) a melt flow rate measured at 230°C under a load of 2.16 kg in accordance with ASTM D 1238 of 0.1 to 40 g/10 min; (3) a molecular weight distribution (Mw/Mn), measured by gel permeation chromatography (GPC), of up to 3; (4) a B-value, being a parameter indicating a randomness of copolymer monomer chain distribution, of 1.0 to 1.3; (5) a melting point Tm, measured by a differential scanning calorimeter, of 60 to 140°C (the melting point, Tm, and a content of 1-butene structural units, M (mol%), satisfying the relationship: $-2.6\ M + 130 \leq Tm \leq -2.3\ M + 155$); and (6) a crystallinity measured by X-ray diffraction, C(%), and the content of 1-butene structural units, M (mol%), satisfying the relationship: $C \geq -1.5\ M + 75$.

The low-density polyethylene (B) has the following properties: (1) a melt flow rate measured at 190°C under a load of 2.16 kg in accordance with ASTM D 1238 of 1 to 25 g/10 min; and (2) a density of 0.915-0.935 g/cm$^3$.

Distinctions of the Invention over Ep '121, Sadatoshi and Yamamoto

EP '121 discusses percentage compositions of propylene and 1-butene, molecular weight distribution of not more and 3, B value of 1.5 and a melting point of 60-140°C. The Examiner admits that EP '121 fails to disclose the melt flow rate of propylene/1-butene copolymer.

The Examiner turns to Sadatoshi for teachings pertaining to a flow rate of propylene polymer of 3.0-50 g/10 min. See Sadatoshi at column 2, lines 41-42. However, the propylene-α-olefin polymer of Sadatosi is obtained by polymerization using a Ziegler-Natta catalyst. See Sadatoshi at column 3, lines 1-4. This type of polymer is fundamentally different from the metallocene catalyzed copolymer (A) of the invention, which is discussed at pages 13 and 14 of the specification.

An analysis of the examples of Sadatoshi illustrates the fundamental differences between Sadatoshi and the invention. The molecular weight distribution (Mw/Mn) of Example 1 in Table of Sadatoshi is 3.7, which is outside of the maximum of 3 set forth in claim 1 of the present invention. Further, Comparative Examples 2 and 3 in the specification show that the copolymer (PBR-2), which uses a Ziegler-Natta catalyst according to the teachings of Sadatoshi, has a B value, which is also out of the present invention's claimed range of 1.0-1.3.

Additionally, the amount of crystalline ethylene polymer in the composition of Sadatoshi is 0.01 to less than 4.0 parts by weight (see claim 1 of Sadatoshi), which is out of the present invention's claimed range of 4 to 50 wt%. See instantly amended claim 1.

Thus, the compositions of Sadatoshi and the claimed invention are so completely different from each other in composition (propylene/1-butene copolymer and the amount of the crystalline ethylene polymer) and properties, and there is no basis to combine Sadatoshi with EP '121 to be the basis of a *prima facie* case of obviousness.

The Examiner then proceeds to utilize the teachings of Yamamoto for the use of high pressure, low density polyethylene. However, component A of Yamamoto is an α-olefin having 4 or more carbon atoms. See, e.g., Yamamoto at column 2, lines 33-34. In contrast, the present invention is drawn to a 3-carbon α-olefin, which is propylene/1-butene random copolymer.

Further, Yamamoto is directed at providing a composition for injection molding. See Yamamoto at column 1, lines 57-59. In contrast, the present invention provides a propylene/1-butene random copolymer composition for use in a laminate layer of a composite film, which requires the properties of excellent low temperature sealing and hot tack. As a result, Yamamoto is non-

analogous art since the composition is a material that is a structural element rather than an adhesive, and a person having ordinary skill in the art would not look to Yamamoto for teachings pertaining to a laminate adhesive.

As has been shown, a person having ordinary skill in the art would not be motivated to combine the teachings of EP '121 with Sadatoshi and Yamamoto to produce a claimed embodiment of the present invention. Thus, a *prima facie* case of obviousness has not been made. Accordingly, this rejection is overcome, and withdrawal thereof is indicated.

**Rejection Under 35 U.S.C. §103(a) Over EP'121 In View Of Sadatoshi and Yamamoto, And Further In View Of Yoshimura (paragraph 9 of the Office Action)**

Claim 6 is rejected under 35 U.S.C. §103(a) over EP'121 in view Of Sadatoshi and Yamamoto, and further in view of Yoshimura (U.S. Patent 5,443,765). Applicants traverse this rejection and respectfully request reconsideration and withdrawal thereof.

Yoshimura fails to address the inability of the combination of EP '121, Sadatoshi and Yamamoto to suggest a claimed embodiment of the invention.

In rejecting claim 6, the Examiner turns to Yoshimura for examples of $C_{3-12}$ $\alpha$-olefins. See, e.g., Yoshimura at column 12, lines 10-12. However, these teachings fail to address the non-

combinability of EP '121, Sadatoshi and Yamamoto. Even if this prior art were combinable, Yoshimura at column 12, lines 10-12 only teaches a limited range of examples, such as propylene, butene, pentene, hexene, heptene, octene and 4-methyl-1-pentene.

Thus, a *prima facie* case of obviousness has not been made over the combination of the four references of EP '121, Sadatoshi, Yamamoto and Yoshimura. Accordingly, this rejection is overcome and withdrawal thereof is indicated.

**Rejection Under 35 U.S.C. §103(a) Over Sugano, EP'121 And Yamamoto (paragraph 10 of the Office Action)**

Claims 1-3, 5 and 7-8 are rejected under 35 U.S.C. §103(a) over Sugano (U.S. Patent 5,468,781) in view of EP'121 and Yamamoto. Applicants traverse this rejection and respectfully request reconsideration and withdrawal thereof.

Sugano pertains to polypropylene expanded particles. At column 5, lines 8-9, Sugano discusses "propylene-1-butene random copolymers of a butene-1 content of 0.1 to 25%," which the Examiner asserts encompasses the composition ranges of the invention.

The Examiner admits that Sugano fails to disclose molecular weight distributions, B value, melting point, crystallinity of propylene/1-butene copolymer, density, melt flow rate and filler.

The Examiner turns to EP '121 and Yamamoto to address the deficiencies of Sugano in suggesting the claimed invention.

However, the additional deficiencies of EP '121 and Yamamoto in suggesting a claimed embodiment of the invention, discussed in detail above, are not alleviated by combination with Sugano. That is, Yamamoto is still from non-analogous art (injection molding) that fails to be applicable to a laminate adhesive. Also, EP '121 fails to disclose the melt flow rate of propylene/1-butene copolymer.

Further, Sugano at column 5, lines 8-9 discusses propylene-butene-1 random copolymers having a butene-1 content of 0.1 to 25 wt%. In contrast, new claim 9 claims "24-40 mol% of structural units derived from 1-butene." This claimed range of 1-butene does not fall within the scope of Sugano because a value of 24 mol% corresponds to 29.6 wt%, which is higher than the upper limit of 25 wt% of Sugano. That is, there is no teaching or suggestion of the claimed range of claim 9 in the applied prior art references.

As has been shown, the combination of Sugano, EP '121 and Yamamoto would fail to motivate a person having ordinary skill in the art to produce a claimed embodiment of the present invention. Thus, a *prima facie* case of obviousness has not been made. Accordingly, this rejection is overcome and withdrawal thereof is indicated.

**Rejection Under 35 U.S.C. §103(a) Over Sugano, EP'121 And Yamamoto, And Further In View Of Yoshimura (paragraph 11 of the Office Action)**

Claim 6 is rejected under 35 U.S.C. §103(a) over Sugano in view of EP'121 and Yamamoto, as applied in paragraph 10 of the Office Action, and further in view of Yoshimura. Applicants traverse this rejection and respectfully request reconsideration and withdrawal thereof.

Yoshimura fails to address the inability of the combination of Sugano, EP '121, and Yamamoto to suggest a claimed embodiment of the invention.

In rejecting claim 6, the Examiner turns to Yoshimura for examples of $C_{3-12}$ $\alpha$-olefins. See, e.g., Yoshimura at column 12, lines 10-12. However, these teachings fail to address the non-combinability of Sugano, EP '121, and Yamamoto. Even if this prior art were combinable, Yoshimura at column 12, lines 10-12 only teaches a limited range of examples, such as propylene, butene, pentene, hexene, heptene, octene and 4-methyl-1-pentene.

Thus, a *prima facie* case of obviousness has not been made over the combination of the four references of Sugano, EP '121, Yamamoto and Yoshimura. Accordingly, this rejection is overcome and withdrawal thereof is indicated.

**Rejection Under 35 U.S.C. §103(a) Over Sadatoshi, Sugano And EP'121 (paragraph 12 of the Office Action)**

Claims 1, 2 and 4-8 are rejected under 35 U.S.C. §103(a) over Sadatoshi, in view of Sugano and EP '121. Applicants traverse this rejection and respectfully request reconsideration and withdrawal thereof.

The Examiner uses Sadatoshi for percent composition ranges, melt flow rate and molecular weight distribution. The Examiner admits that Sadatoshi fails to disclose B value, melting point, crystallinity and the use of filler.

The deficiencies of Sadatoshi have been discussed above. In summary, Sadatoshi's polymer is obtained using a Ziegler-Natta catalyst (compared to the metallocene catalyst of the invention), and the amount of crystalline ethylene polymer in the composition of Sadatoshi is outside of the present invention's instantly claimed range.

The Examiner turns to Sugano for teachings of low density polyethylene. The Examiner turns to EP '121 for B value, melting point, and degree of crystallinity. However, neither Sugano nor EP '121 (which are both discussed in detail above) address the deficiencies of Sadatoshi in suggesting a claimed embodiment of the invention.

As a result, a person having ordinary skill in the art would not be motivated to combine the teachings of Sadatoshi with Sugano

and EP '121 to obtain a claimed embodiment of the present invention. Thus, a *prima facie* case of obviousness has not been made. Accordingly, this rejection is overcome and withdrawal thereof is indicated.

**Prior Art Made OF Record (paragraph 13 of the Office Action)**

The prior art made of record and not relied upon by the Examiner is typical of the conventional art. Accordingly, no further remarks are necessary.

**Information Disclosure Statement**

Applicants thank the Examiner for considering the Information Disclosure Statement file February 13, 2001, and for making the initialed PTO-1449 form of record in the Office Action mailed March 25, 2002.

**Interview With The Examiner**

The Examiner is respectfully requested to contact the Applicant's representative, Robert E. Goozner, Ph.D., (Reg. No. 42,593) at the telephone number of the undersigned below, in order to arrange an interview in an effort to expedite prosecution of the application.

## CONCLUSION

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Robert E. Goozner, Ph.D., (Reg. No. 42,593) at the telephone number of the undersigned below, to expedite prosecution in connection with the present application.

**Attached hereto is a marked-up version of the changes made to the application by this Amendment.**

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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MSW/REG
1155-0215P

Attachment: Version with Markings to Show Changes Made

(Rev. 02/20/02)

**VERSION WITH MARKINGS TO SHOW CHANGES MADE**

IN THE CLAIMS:

Claim 2 has been canceled.

The claims have been amended as follows:

1.(Amended) A propylene/1-butene random copolymer composition comprising 50 to [97%] 96% by weight of a propylene/1-butene random copolymer (A) and [3] 4 to 50% by weight of a low-density polyethylene (B) [obtainable by high pressure processes],

said propylene/1-butene random copolymer (A):

(1) comprising [50 to 95] 60-90 mol% of structural units derived from propylene and [5 to 50] 10-40 mol% of structural units derived from 1-butene;

(2) exhibiting a melt flow rate [(]measured at 230°C under a load of 2.16 kg in accordance with ASTM D 1238[)] of 0.1 to 40 g/10 min;

(3) having a molecular weight distribution (Mw/Mn), measured by gel permeation chromatography (GPC), of up to 3; [and]

(4) having a B-value, being a parameter indicating a randomness of copolymer monomer chain distribution, of 1.0 to [1.5,] 1.3;

(5) has a melting point Tm, measured by a differential scanning calorimeter, of 60 to 140°C,

said melting point, Tm, and a content of 1-butene structural units, M (mol%), satisfying the relationship:

-2.6 M + 130 ≤ Tm ≤ -2.3 M + 155; and

(6) has a crystallinity measured by X-ray diffractometry, C(%), said crystallinity and the content of 1-butene structural units, M (mol%), satisfying the relationship:

C ≥ -1.5 M + 75, and

said low-density polyethylene (B):

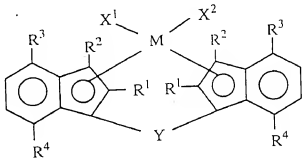
(1) exhibiting a melt flow rate [(]measured at 190°C under a load of 2.16 kg in accordance with ASTM D 1238[)] of 1 to [30] 25 g/10 min; and

(2) having a density of [not greater than 0.940] 0.915-0.935 g/cm$^3$.

3. (Amended) The propylene/1-butene random copolymer composition as claimed in claim 1, wherein the propylene/1-butene random copolymer (A) is obtained by copolymerizing propylene and 1-butene in the presence of an olefin polymerization catalyst,

said olefin polymerization catalyst comprising:

(a) a transition metal compound represented by the general formula:




...[I]

wherein:

M represents a transition metal of Group IVa, Va or VIA of the periodic table;

each of $R^1$ and $R^2$ independently represents a hydrogen atom, a halogen atom, a hydrocarbon group having 1 to 20 carbon atoms, a halogenated hydrocarbon group having 1 to 20 carbon atoms, a silicon-containing group, an oxygen-containing group, a sulfur-containing group, a nitrogen-containing group or a phosphorus-containing group;

each of $R^3$ independently represents a secondary or tertiary alkyl having 3 to 20 carbon atoms or an aromatic group having 6 to 20 carbon atoms;

each of $R^4$ independently represents a hydrogen atom or an alkyl group having 1 to 20 carbon atoms;

each of $X^1$ and $X^2$ independently represents a hydrogen atom, a halogen atom, a hydrocarbon group having 1 to 20 carbon atoms, a halogenated hydrocarbon group having 1 to 20 carbon atoms, an oxygen-containing group or a sulfur-containing group;

Y represents a divalent hydrocarbon group having 1 to 20 carbon atoms, a divalent halogenated hydrocarbon group having 1 to